```
=> file biosis; d que l3
FILE 'BIOSIS' ENTERED AT 14:57:14 ON 07 DEC 2001
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 5 December 2001 (20011205/ED)

The BIOSIS file has been reloaded.  Enter HELP RLOAD and HELP REINDEXING
for details.


L1        84719 SEA FILE=BIOSIS ABB=ON  VACCINE# OR VACCINAT?
L2         4048 SEA FILE=BIOSIS ABB=ON  (CU ZN OR "CU/ZN" OR CUZN OR CUPROZINC
                OR COPPER ZINC) (W) (SUPEROXIDE DISMUTASE# OR SOD OR SODS) OR
                CUZNSOD#
L3           10 SEA FILE=BIOSIS ABB=ON  L1 AND L2


=> file biotechno; d que l6; d que l9; s l6 or l9

FILE 'BIOTECHNO' ENTERED AT 14:57:16 ON 07 DEC 2001
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FILE LAST UPDATED: 04 DEC 2001      <20011204/UP>
FILE COVERS 1980 TO DATE.

>>>  SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
     /CT AND BASIC INDEX  <<<


L4        27535 SEA FILE=BIOTECHNO ABB=ON  VACCINE# OR VACCINAT?
L5         1196 SEA FILE=BIOTECHNO ABB=ON  (CU ZN OR "CU/ZN" OR CUZN OR
                CUPROZINC OR COPPER ZINC) (W) (SUPEROXIDE DISMUTASE# OR SOD OR
                SODS) OR CUZNSOD#
L6            8 SEA FILE=BIOTECHNO ABB=ON  L4 AND L5



L4        27535 SEA FILE=BIOTECHNO ABB=ON  VACCINE# OR VACCINAT?
L7          116 SEA FILE=BIOTECHNO ABB=ON  COPPER/CT AND ZINC/CT AND SUPEROXIDE
                 DISMUTASE/CT
L9            1 SEA FILE=BIOTECHNO ABB=ON  L4 AND L7



L114          8 L6 OR L9

=> file biotechds; d que l14

FILE 'BIOTECHDS' ENTERED AT 14:57:19 ON 07 DEC 2001
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FILE LAST UPDATED: 05 DEC 2001      <20011205/UP>
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>>> NEW DELIMITED FORMAT DALL NOW AVAILABLE <<<
>>> A THESAURUS IS AVAILABLE IN FIELD CT <<<
```

```
L12          141 SEA FILE=BIOTECHDS ABB=ON  (CU ZN OR "CU/ZN" OR CUZN OR
                 CUPROZINC OR COPPER ZINC) (W) (( SUPER OXIDE# OR SUPEROXIDE)
                 (W) DISMUTASE# OR SOD OR SODS) OR CUZNSOD#
L13        13342 SEA FILE=BIOTECHDS ABB=ON  VACCINE# OR VACCINAT?
L14            6 SEA FILE=BIOTECHDS ABB=ON  L12 AND L13


=> file drugu vetu; d que l20

FILE 'DRUGU' ENTERED AT 14:57:21 ON 07 DEC 2001
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FILE 'VETU' ENTERED AT 14:57:21 ON 07 DEC 2001
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L18        25812 SEA VACCINE# OR VACCINAT?
L19          358 SEA (CU ZN OR "CU/ZN" OR CUZN OR CUPROZINC OR COPPER ZINC) (W)
                 ((SUPER OXIDE# OR SUPEROXIDE) (W) DISMUTASE# OR SOD OR SODS)
                 OR CUZNSOD#
L20            6 SEA L18 AND L19


=> file agricola caba lifesci; d que l25

FILE 'AGRICOLA' ENTERED AT 14:57:24 ON 07 DEC 2001

FILE 'CABA' ENTERED AT 14:57:24 ON 07 DEC 2001
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FILE 'LIFESCI' ENTERED AT 14:57:24 ON 07 DEC 2001
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L23          1849 SEA (CU ZN OR "CU/ZN" OR CUZN OR CUPROZINC OR COPPER ZINC) (W)
                 ((SUPER OXIDE# OR SUPEROXIDE) (W) DISMUTASE# OR SOD OR SODS)
                 OR CUZNSOD#
L24        91454 SEA VACCINE# OR VACCINAT?
L25           16 SEA L23 AND L24


=> file embase; d que l33; d que l38; d que l42; d que l47; s l33 or l38 or l42 or
l47

FILE 'EMBASE' ENTERED AT 14:57:34 ON 07 DEC 2001
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 FILE COVERS 1974 TO 6 Dec 2001 (20011206/ED)

 EMBASE has been reloaded. Enter HELP RLOAD for details.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


L27 (      67086)SEA FILE=EMBASE ABB=ON  VACCINE+NT/CT
L28 (      61327)SEA FILE=EMBASE ABB=ON  IMMUNIZATION+NT/CT
L29 (      14931)SEA FILE=EMBASE ABB=ON  SUPEROXIDE DISMUTASE/CT
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L30 (     94984)SEA FILE=EMBASE ABB=ON  L27 OR L28
L31 (        63)SEA FILE=EMBASE ABB=ON  L30 AND L29
L32 (      5218)SEA FILE=EMBASE ABB=ON  (COPPER ZINC) OR (CU ZN) OR CUPROZINC
L33           1 SEA FILE=EMBASE ABB=ON  L31 AND L32


L34 (     67086)SEA FILE=EMBASE ABB=ON  VACCINE+NT/CT
L35 (     61327)SEA FILE=EMBASE ABB=ON  IMMUNIZATION+NT/CT
L36 (        66)SEA FILE=EMBASE ABB=ON  SUPEROXIDE DISMUTASE MACROGOL/CT
L37 (     94984)SEA FILE=EMBASE ABB=ON  L34 OR L35
L38           0 SEA FILE=EMBASE ABB=ON  L37 AND L36


L39 (     14931)SEA FILE=EMBASE ABB=ON  SUPEROXIDE DISMUTASE/CT
L40 (      7725)SEA FILE=EMBASE ABB=ON  GRAM NEGATIVE INFECTION+NT/CT
L41 (       632)SEA FILE=EMBASE ABB=ON  L39 (L) DT
L42           1 SEA FILE=EMBASE ABB=ON  L41 AND L40


L43 (     67086)SEA FILE=EMBASE ABB=ON  VACCINE+NT/CT
L44 (     61327)SEA FILE=EMBASE ABB=ON  IMMUNIZATION+NT/CT
L45 (     94984)SEA FILE=EMBASE ABB=ON  L43 OR L44
L46 (      1856)SEA FILE=EMBASE ABB=ON  COPPER ZINC SUPEROXIDE DISMUTASE/CT
L47           5 SEA FILE=EMBASE ABB=ON  L46 AND L45


L115          7 L33 OR L38 OR L42 OR L47

=> file hcaplus; d que l51; d que l57; d que l60; d que l79; d que l93

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FILE COVERS 1947 - 7 Dec 2001  VOL 135 ISS 25
FILE LAST UPDATED: 6 Dec 2001  (20011206/ED)

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in CA from 1947 to the present.  On April 22, 2001, bibliographic
information and abstracts were added for over 2.2 million references
published in CA from 1947 to 1966.
```

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L48 (     25820)SEA FILE=HCAPLUS ABB=ON  VACCINES+NT/CT
L49 (         1)SEA FILE=REGISTRY ABB=ON  "CU-ZN-SUPEROXIDE DISMUTASE (NEISSERI
              A MENINGITIDIS STRAIN MD58 GENE NMB1398)"/CN
L50 (         2)SEA FILE=HCAPLUS ABB=ON  L49
L51           0 SEA FILE=HCAPLUS ABB=ON  L48 AND L50


L52 (     25820)SEA FILE=HCAPLUS ABB=ON  VACCINES+NT/CT
L53 (         1)SEA FILE=REGISTRY ABB=ON  SUPEROXIDE DISMUTASE/CN
L54 (         1)SEA FILE=REGISTRY ABB=ON  COPPER/CN
L55 (         1)SEA FILE=REGISTRY ABB=ON  ZINC/CN
L56 (       452)SEA FILE=HCAPLUS ABB=ON  L53 AND L54 AND L55
L57           1 SEA FILE=HCAPLUS ABB=ON  L52 AND L56


L58 (     25820)SEA FILE=HCAPLUS ABB=ON  VACCINES+NT/CT
L59 (      4033)SEA FILE=HCAPLUS ABB=ON  (CU ZN OR "CU/ZN" OR CUZN OR CUPROZINC
               OR COPPER ZINC) (W) (SUPEROXIDE DISMUTASE# OR SOD OR SODS) OR
              CUZNSOD#
L60           9 SEA FILE=HCAPLUS ABB=ON  L58 AND L59


L61 (      7537)SEA FILE=HCAPLUS ABB=ON  ANTISERUMS/CT
L62 (      1799)SEA FILE=HCAPLUS ABB=ON  IMMUNOSTIMULATION/CT
L63 (      4766)SEA FILE=HCAPLUS ABB=ON  IMMUNOTHERAPY+OLD/CT
L64 (      5538)SEA FILE=HCAPLUS ABB=ON  IMMUNOTHERAPY+NT/CT
L65 (    186280)SEA FILE=HCAPLUS ABB=ON  ANTIBODIES+NT/CT
L66 (    107299)SEA FILE=HCAPLUS ABB=ON  ANTIGENS/CT OR ANTIGEN CONJUGATES/CT
L67 (      4221)SEA FILE=HCAPLUS ABB=ON  INFECTION/CW (L) BACTERIAL
L68 (      7567)SEA FILE=HCAPLUS ABB=ON  PASTEURELLACEAE+NT/CT
L69 (    144677)SEA FILE=HCAPLUS ABB=ON  ENTEROBACTERIACEAE+NT/CT
L70 (      5318)SEA FILE=HCAPLUS ABB=ON  NEISSERIA+NT/CT
L71 (      4119)SEA FILE=HCAPLUS ABB=ON  GRAM-NEGATIVE BACTERIA+OLD/CT
L72 (         1)SEA FILE=REGISTRY ABB=ON  SUPEROXIDE DISMUTASE/CN
L73 (         1)SEA FILE=REGISTRY ABB=ON  COPPER/CN
L74 (         1)SEA FILE=REGISTRY ABB=ON  ZINC/CN
L75 (         1)SEA FILE=REGISTRY ABB=ON  "CU-ZN-SUPEROXIDE DISMUTASE (NEISSERI
              A MENINGITIDIS STRAIN MD58 GENE NMB1398)"/CN
L76 (         2)SEA FILE=HCAPLUS ABB=ON  L75
L77 (       452)SEA FILE=HCAPLUS ABB=ON  L72 AND L73 AND L74
L78 (    160805)SEA FILE=HCAPLUS ABB=ON  (L67 OR L68 OR L69 OR L70 OR L71)
L79           1 SEA FILE=HCAPLUS ABB=ON  (L76 OR L77) AND L78 AND (L61 OR L62
              OR L63 OR L64 OR L65 OR L66 OR L67)


L80 (      7537)SEA FILE=HCAPLUS ABB=ON  ANTISERUMS/CT
L81 (      1799)SEA FILE=HCAPLUS ABB=ON  IMMUNOSTIMULATION/CT
L82 (      4766)SEA FILE=HCAPLUS ABB=ON  IMMUNOTHERAPY+OLD/CT
L83 (      5538)SEA FILE=HCAPLUS ABB=ON  IMMUNOTHERAPY+NT/CT
L84 (    186280)SEA FILE=HCAPLUS ABB=ON  ANTIBODIES+NT/CT
L85 (    107299)SEA FILE=HCAPLUS ABB=ON  ANTIGENS/CT OR ANTIGEN CONJUGATES/CT
L86 (      4221)SEA FILE=HCAPLUS ABB=ON  INFECTION/CW (L) BACTERIAL
L87 (      7567)SEA FILE=HCAPLUS ABB=ON  PASTEURELLACEAE+NT/CT
L88 (    144677)SEA FILE=HCAPLUS ABB=ON  ENTEROBACTERIACEAE+NT/CT
```

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L89 (      5318)SEA FILE=HCAPLUS ABB=ON  NEISSERIA+NT/CT
L90 (      4119)SEA FILE=HCAPLUS ABB=ON  GRAM-NEGATIVE BACTERIA+OLD/CT
L91 (      4033)SEA FILE=HCAPLUS ABB=ON  (CU ZN OR "CU/ZN" OR CUZN OR CUPROZINC
                 OR COPPER ZINC) (W) (SUPEROXIDE DISMUTASE# OR SOD OR SODS) OR
                 CUZNSOD#
L92 (    160805)SEA FILE=HCAPLUS ABB=ON  (L86 OR L87 OR L88 OR L89 OR L90)
L93           5 SEA FILE=HCAPLUS ABB=ON  L91 (L) L92 AND (L80 OR L81 OR L82 OR
                 L83 OR L84 OR L85 OR L86)

=> s l51 or l57 or l60 or l79 or l93

L116         11 L51 OR L57 OR L60 OR L79 OR L93

=> file medline; d que l98; d que l104; d que l110; s l98 or l104 or l110

FILE 'MEDLINE' ENTERED AT 14:57:44 ON 07 DEC 2001

 FILE LAST UPDATED: 6 DEC 2001 (20011206/UP). FILE COVERS 1958 TO DATE.

 On April 22, 2001, MEDLINE was reloaded. See HELP RLOAD for details.

 MEDLINE now contains IN-PROCESS records. See HELP CONTENT for details.

 MEDLINE is now updated 4 times per week. A new current-awareness alert
 frequency (EVERYUPDATE) is available. See HELP UPDATE for more information.

 MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the
 MeSH 2001 vocabulary. Enter HELP THESAURUS for details.

 The OLDMEDLINE file segment now contains data from 1958 through 1965.
 Enter HELP CONTENT for details.

 Left, right, and simultaneous left and right truncation are available in the
 Basic Index. See HELP SFIELDS for details.

 THIS FILE CONTAINS CAS REGISTRY NUMBERS FOR EASY AND ACCURATE
 SUBSTANCE IDENTIFICATION.


L94 (     79456)SEA FILE=MEDLINE ABB=ON  VACCINES+NT/CT
L95 (     15735)SEA FILE=MEDLINE ABB=ON  SUPEROXIDE DISMUTASE/CT
L96 (        20)SEA FILE=MEDLINE ABB=ON  L94 AND L95
L97 (      4141)SEA FILE=MEDLINE ABB=ON  (COPPER ZINC) OR (CU ZN) OR CUPROZINC

L98           5 SEA FILE=MEDLINE ABB=ON  L96 AND L97


L99 (     15735)SEA FILE=MEDLINE ABB=ON  SUPEROXIDE DISMUTASE/CT
L100(      4141)SEA FILE=MEDLINE ABB=ON  (COPPER ZINC) OR (CU ZN) OR CUPROZINC

L101(     78290)SEA FILE=MEDLINE ABB=ON  IMMUNIZATION+NT/CT
L102(       148)SEA FILE=MEDLINE ABB=ON  L99 (L) IM/CT
L103(        54)SEA FILE=MEDLINE ABB=ON  L102 AND L100
L104          5 SEA FILE=MEDLINE ABB=ON  L103 AND L101


L105(     15735)SEA FILE=MEDLINE ABB=ON  SUPEROXIDE DISMUTASE/CT
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L106(      4141)SEA FILE=MEDLINE ABB=ON  (COPPER ZINC) OR (CU ZN) OR CUPROZINC

L107(    160972)SEA FILE=MEDLINE ABB=ON  GRAM-NEGATIVE BACTERIAL INFECTIONS+NT/
                CT
L108(        86)SEA FILE=MEDLINE ABB=ON  L107 AND L105
L109(        15)SEA FILE=MEDLINE ABB=ON  L108 AND L106
L110          1 SEA FILE=MEDLINE ABB=ON  L109 AND ACTINOBACILLUS PLEUROPNEUMONI
                AE/TI



L117          8 L98 OR L104 OR L110

=> dup rem l117 l25 l3 l114 l14 l115 l116 l20
FILE 'MEDLINE' ENTERED AT 15:04:22 ON 07 DEC 2001

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PROCESSING COMPLETED FOR L25
PROCESSING COMPLETED FOR L3
PROCESSING COMPLETED FOR L114
PROCESSING COMPLETED FOR L14
PROCESSING COMPLETED FOR L115
PROCESSING COMPLETED FOR L116
PROCESSING COMPLETED FOR L20
L118         26 DUP REM L117 L25 L3 L114 L14 L115 L116 L20 (46 DUPLICATES REMOVED)

=> d ibib ab hitrn 1-26; file home

L118 ANSWER 1 OF 26  HCAPLUS  COPYRIGHT 2001 ACS
ACCESSION NUMBER:         2001:489465  HCAPLUS
DOCUMENT NUMBER:          135:103395
TITLE:                    Human copper-zinc-containing superoxide dismutase
```

family 9 protein and its cDNA and use thereof
INVENTOR(S): Mao, Yumin; Xie, Yi
PATENT ASSIGNEE(S): Shanghai Biowindow Gene Development Inc., Peop. Rep. China
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2001047996 | A1 | 20010705 | WO 2000-CN676 | 20001225 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| CN 1301744 | A | 20010704 | CN 1999-125785 | 19991227 |

PRIORITY APPLN. INFO.: CN 1999-125785 A 19991227

AB The invention provides cDNA sequences of a novel human copper-zinc-contg. superoxide dismutase family 9 protein cloned from placenta brain. The invention also relates to constructing copper-zinc-contg. superoxide dismutase family 9 protein gene expression vectors to prep. recombinant copper-zinc-contg. superoxide dismutase family 9 protein using E.coli cells or eukaryotic cells. Methods of expressing and prepg. recombinant copper-zinc-contg. superoxide dismutase family 9 protein and its antibody are described. Methods of using copper-zinc-contg. superoxide dismutase family 9 protein gene or protein products for the treatment of various kinds of diseases, such as cancer, blood diseases, HIV infection, immune diseases and inflammation are also disclosed.

REFERENCE COUNT: 2
REFERENCE(S):
(1) Anon; Nucleic Acids Res 1985, V13(6), P2017
(2) Anon; Proc Natl Acad Sci U S A 1986, V83(11), P3619

L118 ANSWER 2 OF 26 BIOTECHDS COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000-07254 BIOTECHDS
TITLE: **Vaccine** for providing protection against bacterial infection, particularly menigococcal infection, comprises a **copper, zinc-superoxide-dismutase** of the dimeric type;
method eliciting protective immunity to meningococcal infection in an animal
AUTHOR: Gorringe A R; Kroll J S; Langford P R; Robinson A
PATENT ASSIGNEE: Univ.London; Cent.Appl.Microbiol.Res.Porton-Down
LOCATION: Salisbury, UK; London, UK.
PATENT INFO: WO 2000012718 9 Mar 2000
APPLICATION INFO: WO 1999-GB2828 27 Aug 1999
PRIORITY INFO: GB 1998-18756 27 Aug 1998
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2000-237879 [20]

AB A new **vaccine** (I) comprising a **copper, zinc ,-superoxide-dismutase** (**Cu,Zn-**

**SOD**, EC-1.15.1.1) of the dimeric type, a fragment, variant or derivative, or a nucleic acid encoding **Cu,Zn-SOD** is claimed. Also claimed are: a method of preparing a pharmaceutical composition comprising cloning a gene for a **Cu, Zn-SOD** (obtained from bacteria) of the dimeric type to obtain a recombinant form of the gene; and synthesizing **Cu, Zn-SOD** from the recombinant gene; a pharmaceutical preparation comprising an antibody to a **Cu,Zn-SOD**; a multivalent **vaccine** (II) comprising many **Cu,Zn-SODs** from the same or different species of Gram-negative bacteria; and an antibody specific to bacterial **Cu, Zn-SOD**. The **vaccine** is useful for providing protection against bacterial infection, particularly Gram-negative bacteria selected from Pasteurellaceae, Hemophilus, Salmonella and Escherichia, especially meningococcal infection, and has bacteriocidal, and immunostimulatory activity to Actinobacillus pleuropneumoniae. (27pp)

L118 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:314568 HCAPLUS
DOCUMENT NUMBER: 132:333377
TITLE: Multicomponent meningococcal vaccine
INVENTOR(S): Robinson, Andrew; Gorringe, Andrew Richard; Hudson, Michael John; Reddin, Karen Margaret
PATENT ASSIGNEE(S): Microbiological Research Authority CAMR (Centre for Applied Microbiology & Research), UK
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2000025811 | A2 | 20000511 | WO 1999-GB3626 | 19991102 |
| WO 2000025811 | A3 | 20001005 | | |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| BR 9914946 | A | 20010710 | BR 1999-14946 | 19991102 |
| EP 1126874 | A2 | 20010829 | EP 1999-954130 | 19991102 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |

PRIORITY APPLN. INFO.: GB 1998-23978 A 19981102
WO 1999-GB3626 W 19991102

AB A compn. comprising transferrin binding proteins A and B is described (TbpA and TbpB). The compn. is suitable for use in vaccines and for treatment of Gram neg. bacterial infection, particularly meningococcal infection, demonstrating a broad spectrum of protection to a no. of different bacterial pathogens. Also described are compns. comprising Tbps and other components, such as Neisserial outer membrane vesicles and **Cu,Zn-Superoxide dismutase**. Methods for prepn. of these compns. and their uses in vaccination against disease

are further provided.

L118 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:161457 HCAPLUS
DOCUMENT NUMBER: 132:206934
TITLE: **Cu,Zn-Superoxide dismutase** or antibody thereto as vaccine against bacterial (including meningococcal) infection
INVENTOR(S): Gorringe, Andrew Richard; Kroll, John Simon; Langford, Paul Richard; Robinson, Andrew
PATENT ASSIGNEE(S): Microbiological Research Authority, UK; Imperial College of Science, Technology and Medicine
SOURCE: PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2000012718 | A1 | 20000309 | WO 1999-GB2828 | 19990827 |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| AU 9956350 | A1 | 20000321 | AU 1999-56350 | 19990827 |
| EP 1108038 | A1 | 20010620 | EP 1999-943065 | 19990827 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |

PRIORITY APPLN. INFO.: GB 1998-18756 A 19980827
WO 1999-GB2828 W 19990827

AB The present invention relates to pharmaceutical compns. comprising **Cu,Zn-superoxide dismutase** (**Cu,Zn-SOD**) of the dimeric type, nucleic acid encoding a **Cu,Zn-SOD**, or antibody to a **Cu,Zn-SOD** for treating and/or vaccinating against bacterial infection. Also described are methods for isolation of **Cu,Zn-SODs** and for prepn. of pharmaceutical compns., preferably for providing or eliciting protective immunity to meningococcal infection in an animal.

IT **9054-89-1P**, Superoxide dismutase
RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); PUR (Purification or recovery); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(Cu,Zn-, of dimeric form; **Cu,Zn-Superoxide dismutase** or antibody thereto as vaccine against bacterial (including meningococcal) infection)

IT **7440-50-8**, Copper, biological studies **7440-66-6**, Zinc, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**Cu,Zn-Superoxide dismutase** or antibody thereto as vaccine against bacterial (including meningococcal) infection)

REFERENCE COUNT: 9
REFERENCE(S):
(1) Beaman, L; INFECTION AND IMMUNITY 1990, V58(9), P3122 HCAPLUS
(2) Farrant, J; MOLECULAR MICROBIOLOGY 1997, V25(4), P785 HCAPLUS
(3) Fujisawa Pharmaceut Co Ltd; JP 04074134 A 1992 HCAPLUS
(4) Gruenenthal Gmbh; DE 4038563 A 1992 HCAPLUS
(5) Langford, P; FEMS IMMUNOLOGY AND MEDICAL MICROBIOLOGY 1997, V17(4), P235 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L118 ANSWER 5 OF 26 MEDLINE
ACCESSION NUMBER: 2000404355 MEDLINE
DOCUMENT NUMBER: 20359380 PubMed ID: 10899887
TITLE: **Cu,Zn**]-Superoxide dismutase mutants of the swine pathogen **Actinobacillus pleuropneumoniae** are unattenuated in infections of the natural host.
AUTHOR: Sheehan B J; Langford P R; Rycroft A N; Kroll J S
CORPORATE SOURCE: Molecular Infectious Diseases Group, Department of Paediatrics, Imperial College School of Medicine, St. Mary's Campus, London W2 1PG, United Kingdom.
SOURCE: INFECTION AND IMMUNITY, (2000 Aug) 68 (8) 4778-81. Journal code: GO7; 0246127. ISSN: 0019-9567.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200008
ENTRY DATE: Entered STN: 20000901
Last Updated on STN: 20000901
Entered Medline: 20000824
AB Actinobacillus pleuropneumoniae, the causative agent of porcine pleuropneumonia, contains a periplasmic Cu- and Zn-cofactored superoxide dismutase ([**Cu,Zn**]-SOD, or SodC) which has the potential, realized in other pathogens, to promote bacterial survival during infection by dismutating host-defense-derived superoxide. Here we describe the construction of a site-specific, [**Cu,Zn**]-SOD-deficient A. pleuropneumoniae serotype 1 mutant and show that although the mutant is highly sensitive to the microbicidal action of superoxide in vitro, it remains fully virulent in experimental pulmonary infection in pigs.

L118 ANSWER 6 OF 26 MEDLINE DUPLICATE 1
ACCESSION NUMBER: 2000278109 MEDLINE
DOCUMENT NUMBER: 20278109 PubMed ID: 10816475
TITLE: Overexpression of protective antigen as a novel approach to enhance vaccine efficacy of Brucella abortus strain RB51.
AUTHOR: Vemulapalli R; He Y; Cravero S; Sriranganathan N; Boyle S M; Schurig G G
CORPORATE SOURCE: Department of Biomedical Sciences, Center for Molecular Medicine and Infectious Diseases, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA.. rvemulap@vt.edu
SOURCE: INFECTION AND IMMUNITY, (2000 Jun) 68 (6) 3286-9. Journal code: GO7; 0246127. ISSN: 0019-9567.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200006
ENTRY DATE: Entered STN: 20000706
Last Updated on STN: 20000706
Entered Medline: 20000623

AB Brucella abortus strain RB51 is an attenuated rough strain that is currently being used as the official live vaccine for bovine brucellosis in the United States and several other countries. We reasoned that overexpression of a protective antigen(s) of B. abortus in strain RB51 should enhance its vaccine efficacy. To test this hypothesis, we overexpressed **Cu/Zn** superoxide dismutase (SOD) protein of B. abortus in strain RB51. This was accomplished by transforming strain RB51 with a broad-host-range plasmid, pBBR1MCS, containing the sodC gene along with its promoter. Strain RB51 overexpressing SOD (RB51SOD) was tested in BALB/c mice for its ability to protect against challenge infection with virulent strain 2308. Mice vaccinated with RB51SOD, but not RB51, developed antibodies and cell-mediated immune responses to **Cu/Zn** SOD. Strain RB51SOD vaccinated mice developed significantly ($P < 0.05$) more resistance to challenge than those vaccinated with strain RB51 alone. The presence of the plasmid alone in strain RB51 did not alter its vaccine efficacy. Also, overexpression of SOD did not alter the attenuation characteristic of strain RB51.

L118 ANSWER 7 OF 26 VETU COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-61941 VETU
TITLE: Limitations of vaccinia virus as vector for Brucella abortus antigens.
AUTHOR: Baloglu S; Vemulapalli R; Boyle S M; Sriranganathan N; Schurig G G; Toth T E
CORPORATE SOURCE: Univ.Virginia-Polytech.Inst.+State
LOCATION: Blacksburg, Va., USA
SOURCE: Conf.Res.Workers Anim.Dis. (81 Meet., 98, 2000)
AVAIL. OF DOC.: Department of Biomedical Sciences and Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, U.S.A.
LANGUAGE: English
DOCUMENT TYPE: Journal
FIELD AVAIL.: AB; LA; CT

AB The protective potential of bacterial antigens expressed by vaccinia virus (VV) recombinants has not been widely explored. In earlier studies, the target protein coding sequences of Bruc. abortus, GroEL, **Cu/Zn-SOD**, HtrA and 18 kDA antigens, were cloned into VV by homologous recombination. In this study, Balb/c mice immunized with the VV recombinants produced specific antibodies to Bruc. antigens but were not significantly protected from B. abortus strain 2308 challenge. To analyze VV as a vector for intracellular pathogens, the protective portion of Listeria monocytogenes listeriolysin and B. abortus ribosomal protein L7/L12 was cloned into VV genome. Antibody responses and protection induced in mice by these recombinants were compared. (conference abstract: Conference of Research Workers in Animal Diseases, 81st Annual Meeting, Chicago, Illinois, USA, November, 2000). (No EX).

L118 ANSWER 8 OF 26 BIOTECHDS COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1999-10899 BIOTECHDS
TITLE: An over-expressing homologous antigen **vaccine**; plasmid-mediated antigen **Cu/zn SOD**, GroES and GroEL gene transfer, expression in attenuated pathogen, used for vertebrate immunization

against Brucella sp., Mycobacterium sp. and Vibrio sp.
AUTHOR: Boyle S M; Cravero S; Corbeil L; Schurig G G; Spirnaganathan N; Vemulapalli R
PATENT ASSIGNEE: Virginia-Tech.Intellectual-Prop.
LOCATION: Blacksburg, VA, USA.
PATENT INFO: WO 9929340 17 Jun 1999
APPLICATION INFO: WO 1997-US23032 5 Dec 1997
PRIORITY INFO: WO 1997-US23032 5 Dec 1997
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 1999-385490 [32]
AB A **vaccine** for the immunization of vertebrates against disease caused by a pathogen is new and contains an attenuated or avirulent derivative of the pathogen, especially Brucella sp., Mycobacterium sp. and Vibrio sp., that over expresses at least one homologous antigen encoded by at least one gene (e.g. **Cu/Zn SOD** , GroES and GroEL gene) from the pathogen. The Brucella sp. include Brucella abortus, Brucella melitensis, Brucella suis and Brucella canis. Also claimed are: plasmid pUC19 genomic library; a method for prophylaxis or treatment of a vertebrate at risk of or suffering from Brucellosis; and a method for treatment of a vertebrate at risk or suffering from a pathogenic microorganism by inserting at least one gene into a multicopy plasmid and transforming an attenuated or avirulent version of the pathogenic microorganism to form a **vaccine**. The **vaccine** can be used to treat vertebrates at risk of or suffering from disease caused by pathogenic microorganism. (28pp)

L118 ANSWER 9 OF 26 MEDLINE DUPLICATE 3
ACCESSION NUMBER: 1999115587 MEDLINE
DOCUMENT NUMBER: 99115587 PubMed ID: 9916121
TITLE: Vaccination with live Escherichia coli expressing Brucella abortus **Cu/Zn** superoxide dismutase protects mice against virulent B. abortus.
AUTHOR: Onate A A; Vemulapalli R; Andrews E; Schurig G G; Boyle S; Folch H
CORPORATE SOURCE: Department of Microbiology, Faculty of Biological Sciences, Universidad de Concepcion, Concepcion, Chile.. aonate@udec.cl
SOURCE: INFECTION AND IMMUNITY, (1999 Feb) 67 (2) 986-8. Journal code: GO7; 0246127. ISSN: 0019-9567.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199903
ENTRY DATE: Entered STN: 19990324
Last Updated on STN: 19990324
Entered Medline: 19990309
AB Vaccination of mice with Escherichia coli expressing Brucella **Cu /Zn** superoxide dismutase (SOD) [E. coli(pBSSOD)] induced a significant level of protection against virulent Brucella abortus challenge, although this level was not as high as the one reached with B. abortus vaccine strain RB51. In addition, vaccination with E. coli(pBSSOD) induced antibodies to **Cu/Zn** SOD and a strong proliferative response of splenocytes when stimulated in vitro with a thioredoxin-**Cu/Zn** SOD fusion protein.

L118 ANSWER 10 OF 26 MEDLINE DUPLICATE 4
ACCESSION NUMBER: 1999255842 MEDLINE
DOCUMENT NUMBER: 99255842 PubMed ID: 10320619

TITLE: Immunogenicity of the extracellular **copper/zinc** superoxide dismutase of the filarial parasite Acanthocheilonema viteae delivered by a two-phase vaccine strain of Salmonella typhimurium.
AUTHOR: Lattemann C T; Yan Z X; Matzen A; Meyer T F; Apfel H
CORPORATE SOURCE: Max-Planck-Institut fur Biologie, Abteilung Infektionsbiologie, Spemannstrasse 34, D-72076 Tubingen, Germany.
SOURCE: PARASITE IMMUNOLOGY, (1999 Apr) 21 (4) 219-24. Journal code: OQU; 7910948. ISSN: 0141-9838.
PUB. COUNTRY: ENGLAND: United Kingdom Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199906
ENTRY DATE: Entered STN: 19990618 Last Updated on STN: 19990618 Entered Medline: 19990608

AB The recombinant extracellular **copper/zinc** superoxide dismutase of the filarial parasite Acanthocheilonema viteae (AVSOD2) was cloned in an expression vector under control of the bacteriophage T7 promoter and the resulting plasmid pLAT7 was introduced in tha aroA attenuated Salmonella typhimurium vaccine strain SL3261:pYZ84. This vaccine strain carries a chromosomally integrated two phase expression system containing inducible T7 RNA polymerase. The recombinant AVSOD2 was efficiently expressed, constituting up to 5% of the total bacterial protein. Furthermore, the plasmid vector containing the AVSOD2 cDNA was shown to be stable over a long period of time in the vaccine strain without antibiotic selection in vitro and in vivo. Jirds which were immunised orally with the recombinant vaccine strain expressing the A. viteae EC-SOD produced a strong humoral immune response.

L118 ANSWER 11 OF 26 MEDLINE
ACCESSION NUMBER: 1998247032 MEDLINE
DOCUMENT NUMBER: 98247032 PubMed ID: 9585940
TITLE: Extracellular and cytoplasmic **Cu/Zn** superoxide dismutases from Haemonchus contortus.
AUTHOR: Liddell S; Knox D P
CORPORATE SOURCE: Moredun Research Institute, Edinburgh, Scotland, UK.
SOURCE: PARASITOLOGY, (1998 Apr) 116 ( Pt 4) 383-94. Journal code: OR0; 0401121. ISSN: 0031-1820.
PUB. COUNTRY: ENGLAND: United Kingdom Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-Z69621; GENBANK-Z69630
ENTRY MONTH: 199806
ENTRY DATE: Entered STN: 19980618 Last Updated on STN: 19980618 Entered Medline: 19980611

AB Full-length cDNAs encoding cytosolic (SODc) and putative extracellular (SODe) **Cu/Zn** superoxide dismutases (SODs) from the ovine gastrointestinal parasitic nematode Haemonchus contortus have been isolated and characterized. The predicted sequences of the H. contortus SODs showed strong homology to other helminth SODs, the highest level of sequence similarity was with those of the free-living nematode Caenorhabditis elegans++. The predicted amino acid sequence of the putative extracellular form contained an N-terminal extension with the characteristics of a signal sequence including a potential signal peptidase cleavage site. Transcripts of both classes of **Cu/**

**Zn** SOD were detected in all life-cycle stages examined. The cytosolic SOD mRNA was approximately 6-fold more abundant than that of the extracellular enzyme in adult parasites. Immunoblotting with antisera raised to in vitro-expressed parasite SODs revealed the presence of 2 proteins in extracts of adult H. contortus, with molecular masses of approximately 19.8 and 18 kDa. An additional protein of approximately 16.8 kDa was detected in adult ES material. Immunofluorescent staining showed **Cu/Zn** SOD was localized in the body wall musculature and the pharynx in adult worms and in the uterine tract of adult females. The immunogenic properties of recombinant H. contortus **Cu/Zn** SODs was assessed in a challenge infection experiment in lambs.

L118 ANSWER 12 OF 26 BIOTECHNO COPYRIGHT 2001 Elsevier Science B.V.DUPLICATE
ACCESSION NUMBER: 1996:26135321 BIOTECHNO
TITLE: Chiron: Analysis of patenting 1992-1995
AUTHOR: Steele P.
CORPORATE SOURCE: Intellectual Property Consultancy, 9-10 College Terrace,London E3 5AN, United Kingdom.
SOURCE: Expert Opinion on Therapeutic Patents, (1996), 6/4 (303-312)
CODEN: EOTPEG ISSN: 1354-3776
DOCUMENT TYPE: Journal; (Short Survey)
COUNTRY: United Kingdom
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Chiron is arguably the foremost specialist biotechnology R and D company in the world. This profile details the Company's uniquely low ratio of patents per compound derived from the exceptionally large and active development pipeline, the Company's strong associations with large conventional companies such as Ciba-Geigy and their aggressive company acquisition policy which has resulted in rapid sales growth but has adversely affected profitability. The Company's patenting policy and profile is discussed, revealing that 75% of its patenting is classed as pharmaceutical, dominated by virus-orientated projects and with virtually all of its inventors based in the US. This article provides in depth analysis of Chiron's patenting activity and R and D between 1990 and 1995.

L118 ANSWER 13 OF 26 EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 96008121 EMBASE
DOCUMENT NUMBER: 1996008121
TITLE: Pathogenesis and treatment of the adult respiratory distress syndrome.
AUTHOR: Fulkerson W.J.; MacIntyre N.; Stamler J.; Crapo J.D.
CORPORATE SOURCE: DPCCM, Duke University Medical Center,Durham, NC, United States
SOURCE: Archives of Internal Medicine, (1996) 156/1 (29-38).
ISSN: 0003-9926 CODEN: AIMDAP
COUNTRY: United States
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 005 General Pathology and Pathological Anatomy
006 Internal Medicine
015 Chest Diseases, Thoracic Surgery and Tuberculosis
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
AB The adult respiratory distress syndrome is an acute clinical illness characterized by non-cardiogenic pulmonary edema and refractory hypoxemia. Injury to the alveolar-capillary barrier and lung inflammation lead to intrapulmonary shunting of blood, surfactant depletion, and pulmonary

vascular obstruction. Numerous mediators contribute to the pathologic response. Conventional therapy includes treating underlying causes and positive pressure mechanical ventilation. Concern about pressure-induced lung injury had led to new strategies to accomplish adequate gas exchange. Novel therapeutic interventions have included extracorporeal support techniques, use of compounds designed to neutralize proinflammatory cytokines, and administration of surfactants, but these efforts have not definitely affected mortality in randomized trials. Potent antioxidant agents have shown promise in animal models of acute lung injury, but human studies are lacking. Inhaled nitric oxide appears to have temporary effects on pulmonary artery pressure and on ventilation or perfusion relationships, but longer-term efficacy and safety in patients suffering from adult respiratory distress syndrome is unknown and awaits results of ongoing clinical trials.

L118 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:620256 HCAPLUS
DOCUMENT NUMBER: 123:51804
TITLE: Copper, zinc superoxide dismutase in Escherichia coli: periplasmic localization
AUTHOR(S): Benov, Ludmil; Chang, Ling Yi; Day, Brian; Fridovich, Irwin
CORPORATE SOURCE: Deps. Biochemistry and Medicine, Duke Univ. Medical Center, Durham, NC, 27710, USA
SOURCE: Arch. Biochem. Biophys. (1995), 319(2), 508-11
CODEN: ABBIA4; ISSN: 0003-9861
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cu,ZnSOD (SOD = superoxide dismutase) purified from Escherichia coli has been used to raise antibodies in rabbits. The resultant antiserum was found to recognize a single band on Western blots of SDS-polyacrylamide gel electropherograms, and that single band coincided with the position of the Cu,ZnSOD. Ultrathin sections of fixed E. coli were treated with the antibody followed by protein A bearing 10-nm gold particles. Electron microscopy revealed that Cu,ZnSOD was largely localized in the periplasm in polar bays.

L118 ANSWER 15 OF 26 CABA COPYRIGHT 2001 CABI DUPLICATE 6
ACCESSION NUMBER: 95:163691 CABA
DOCUMENT NUMBER: 952212885
TITLE: Selective humoral immune response of Balb/C mice to Brucella abortus proteins expressed by vaccinia virus recombinants
AUTHOR: Toth, T. E.; Cobb, J. A.; Boyle, S. M.; Roop, R. M.; Schurig, G. G.
CORPORATE SOURCE: Department of Pathobiology, Center for Molecular Medicine and Infectious Diseases, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0443, USA.
SOURCE: Veterinary Microbiology, (1995) Vol. 45, No. 2/3, pp. 171-183. 39 ref.
ISSN: 0378-1135
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Genes encoding Brucella abortus **Cu/Zn superoxide dismutase** (SOD) and a 54 kDa Escherichia coli HtrA homologue were cloned into shuttle plasmids pUV-1 and pSC11, and transfected into vaccinia virus to develop recombinants vUBSOD and vSB54. Control vaccinia virus recombinants vUV-1 and vSC11, carrying only

the\beta\-gal reporter gene but no B. abortus DNA were also developed. Recombinants were analysed in Western blotting using a polyclonal B. abortus immune serum. vUBSOD expressed a protein of apparent molecular weight of 28 kDa, composed of the 20 kDa B. abortus **Cu/Zn-SOD** and a protein approximately 8 kDa encoded by a portion of the vaccinia virus TK gene. vSB54 expressed a 54 kDa protein corresponding to the 54 kDa HtrA homologue. Recombinants vUSV-1 and vSC11 did not express B. abortus proteins. Groups of mice were inoculated intraperitoneally with 107 TCID50 of 1 of the 4 different recombinant vaccinia viruses and 5 weeks later their sera were analysed for antibodies against vaccinia virus and B. abortus proteins. Each group of mice responded with antibodies to vaccinia virus. Sera of vSB54-inoculated mice recognized the 54 kDa HtrA homologue. vUBSOD did not induce a humoral immune response. These results represent the first report on the expression of B. abortus proteins by vaccinia virus recombinants and the first demonstrated immune response against a B. abortus protein expressed by such a recombinant.

L118 ANSWER 16 OF 26 CABA COPYRIGHT 2001 CABI DUPLICATE 7
ACCESSION NUMBER: 96:129779 CABA
DOCUMENT NUMBER: 962212222
TITLE: An 18.5 kDa protein: an interesting antigen of Brucella
Proteina de 18.5 kDa: un antigeno interesante en Brucella
AUTHOR: Onate, A.; Folch, H.
CORPORATE SOURCE: Instituto de Inmunologia, Facultad de Medicina, Universidad Austral de Chile, Casilla 567, Valdivia, Chile.
SOURCE: Archivos de Medicina Veterinaria, (1995) Vol. 27, No. extraordinar, pp. 93-102. 43 ref.
ISSN: 0301-732X
DOCUMENT TYPE: Journal
LANGUAGE: Spanish
SUMMARY LANGUAGE: English
AB An 18.5 kDa peptide from B. abortus, free of LPS and nucleic acids had an amino-terminal sequence corresponding to **copper/zinc superoxide dismutase** (SOD Cu/Zn). The in vitro stimulation of sensitized mouse lymph node cells with SOD Cu/Zn induced an increase in DNA synthesis. The lymphokine production profile was characteristic of TH-1 cells, expressing high levels of gamma interferon, a moderate level of interleukin-2 but no interleukin-4. It is concluded that SOD Cu/Zn is a promising immunogen that may be used to induce a protective cellular immune response against Brucella.

L118 ANSWER 17 OF 26 MEDLINE DUPLICATE 8
ACCESSION NUMBER: 95066309 MEDLINE
DOCUMENT NUMBER: 95066309 PubMed ID: 7526568
TITLE: Modulation of immune responses in Balb/c mice vaccinated with Brucella abortus **Cu-Zn** superoxide dismutase synthetic peptide vaccine.
AUTHOR: Tabatabai L B; Pugh G W Jr
CORPORATE SOURCE: USDA, ARS, MWA, National Animal Disease Center, Ames, IA 50010.
SOURCE: VACCINE, (1994 Aug) 12 (10) 919-24.
Journal code: X6O; 8406899. ISSN: 0264-410X.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals

ENTRY MONTH: 199412
ENTRY DATE: Entered STN: 19950110
Last Updated on STN: 19960129
Entered Medline: 19941219

AB Three peptides, peptide 1 (GGDNYSDKPEPLGG), peptide 2 (LAEIKQRSLMVHGG) and peptide 3 (GGAPGEKDGKIVPAG), were synthesized based on the amino acid sequence of Brucella abortus **Cu-Zn** superoxide dismutase. These peptides were selected on the basis of their predicted hydrophilicity, flexibility and antigenicity profiles. The three peptides, singly or in combination, with or without the adjuvant monophosphoryl lipid A were administered to Balb/c mice as vaccines for brucellosis. The protective and immune responses induced by the peptide vaccines after challenge exposure to virulent B. abortus strain 2308 were compared to those obtained with salt-extractable proteins (BCSP) vaccine prepared from B. abortus strain 19, recombinant B. abortus **Cu-Zn** superoxide dismutase (rSOD) vaccine and non-vaccinated mice. Mice vaccinated with 30 micrograms of peptide 3 plus 50 micrograms monophosphoryl lipid A afforded two logs of protection (reduction in log10 colony-forming units compared with control mice) and one log of protection when given without monophosphoryl lipid A, whereas 5 micrograms of the salt-extractable proteins afforded three logs of protection. The rSOD and peptides 1 and 2 given with or without monophosphoryl lipid A afforded no protection. Superoxide dismutase-specific IgG antibody was present in postchallenge sera only if BCSP was present in the vaccine. Peptide-specific IgG antibodies were present in postchallenge sera of mice, and antibody concentrations were generally enhanced when monophosphoryl lipid A was included in the vaccine. The overall results with the peptide vaccines suggest that peptide 3 probably contains a specific sequence preferentially recognized by the cellular immune system leading to modulation of immune response mechanisms responsible for decreasing splenic infection.

L118 ANSWER 18 OF 26 MEDLINE DUPLICATE 9
ACCESSION NUMBER: 95099770 MEDLINE
DOCUMENT NUMBER: 95099770 PubMed ID: 7801538
TITLE: Immune responses to superoxide dismutase and synthetic peptides of superoxide dismutase in cattle vaccinated with Brucella abortus strain 19 or RB51.
AUTHOR: Stevens M G; Tabatabai L B; Olsen S C; Cheville N F
CORPORATE SOURCE: National Animal Disease Center, United States Department of Agriculture, Ames, IA 50010.
SOURCE: VETERINARY MICROBIOLOGY, (1994 Aug 15) 41 (4) 383-9.
Journal code: XBW; 7705469. ISSN: 0378-1135.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199501
ENTRY DATE: Entered STN: 19950215
Last Updated on STN: 19970203
Entered Medline: 19950126

AB Antibody and lymph node cell-mediated immune responses to recombinant Brucella abortus strain 19 **Cu-Zn** superoxide dismutase (rSOD) and to three synthetic strain 19 **Cu-Zn** SOD peptides were measured during 2 to 12 weeks following vaccination of cattle with B. abortus strain 19 or RB51. Cattle vaccinated with strain 19 or RB51 did not produce antibody to rSOD and to the SOD peptides. Lymph node cells from cattle vaccinated with strain 19, but not with strain RB51, proliferated when incubated with either rSOD or one of the three tested SOD peptides (GGDNYSDKPEPLGG). These results suggest that neither

the strain 19 nor the strain RB51 vaccine induces antibody production to SOD and only the strain 19 vaccine induces lymph node cell-mediated immune responses to SOD.

L118 ANSWER 19 OF 26 MEDLINE
ACCESSION NUMBER: 94366821 MEDLINE
DOCUMENT NUMBER: 94366821 PubMed ID: 8084670
TITLE: Superoxide dismutase (SOD) activity of Dictyocaulus viviparus and its inhibition by antibody from infected and vaccinated bovine hosts.
AUTHOR: Britton C; Knox D P; Kennedy M W
CORPORATE SOURCE: Wellcome Laboratories for Experimental Parasitology, University of Glasgow, UK.
SOURCE: PARASITOLOGY, (1994 Aug) 109 ( Pt 2) 257-63.
Journal code: OR0; 0401121. ISSN: 0031-1820.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199410
ENTRY DATE: Entered STN: 19941021
Last Updated on STN: 19970203
Entered Medline: 19941011

AB The presence of superoxide dismutase (SOD) activity in the bovine lungworm Dictyocaulus viviparus was examined using the xanthine-xanthine oxidase assay system and by non-denaturing PAGE followed by specific enzyme staining. High levels of activity were detected in excretory-secretory (ES) products of adult worms and in soluble extracts of both the L3 and adult stages of the parasite. Stage-specific and ES-specific activities were indicated by differences in SOD isoenzyme profiles between adult and larval parasite extracts and between adult extract and ES products, with a fast migrating activity being specific to ES products. All isoenzymes were sensitive to cyanide, indicating **copper/zinc** dependency. The antigenicity of ES SOD was demonstrated by a reduction in SOD activity in both the chemical assay and non-denaturing PAGE following incubation of parasite ES products with IgG antibody purified from serum of infected or vaccinated bovine hosts. The high level of SOD activity released by adult D. viviparus may be a reflection of the problems faced by a parasite occupying an oxygen-rich environment. Antibody inhibition of SOD may, therefore, be an important target of protective immunity.

L118 ANSWER 20 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS DUPLICATE 10
ACCESSION NUMBER: 1994:500242 BIOSIS
DOCUMENT NUMBER: PREV199497513242
TITLE: Characterization of enzymatically active Onchocera volvulus **Cu/Zn superoxide dismutase** expressed in Escherichia coli.
AUTHOR(S): Henkle-Duehrsen, Kimberly (1); Warnecke, Caren; Brattig, Norbert; Liebau, Eva; Walter, Rolf D.
CORPORATE SOURCE: (1) Bernhard Nocht Inst. Tropical Med., Dep. Biochem., Bernhard-Nocht-Strasse 74, 20359 Hamburg Germany
SOURCE: Molecular and Biochemical Parasitology, (1994) Vol. 67, No. 1, pp. 41-47.
ISSN: 0166-6851.
DOCUMENT TYPE: Article
LANGUAGE: English

AB The Onchocerca volvulus superoxide dismutase was expressed in Escherichia coli, using a protocol designed to produce the native enzyme rather than a fusion protein. The recombinant O. volvulus superoxide dismutase (rOVSOD) was found in the cytosol of the disrupted bacteria and represented gt 10%

of the total bacterial protein. The enzyme was purified to homogeneity using DEAE-Sepharose chromatography, followed by phenyl-Sepharose chromatography. The rOVSOD was enzymatically active which was demonstrated by its reactivity with O-2.- produced either by the xanthine-xanthine oxidase system or by stimulated eosinophils. The specific activity was determined to be 4668 U mg-1. This activity could be blocked by rabbit antiserum raised against the rOVSOD. The maximal activity was obtained upon supplementation of the bacterial growth media and enzyme buffer with copper and zinc ions. Activity characteristics in the presence of inhibitors was also characteristic of a **Cu/Zn superoxide dismutase**. The rOVSOD has an apparent subunit molecular mass of 16 000 in SDS-PAGE. The active enzyme behaves as a dimer of 32 kDa as determined by gel filtration.

L118 ANSWER 21 OF 26 BIOTECHDS COPYRIGHT 2001 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1993-12790 BIOTECHDS
TITLE: Superoxide-dismutase mouse monoclonal antibody production; produced using hybridoma cell culture
PATENT ASSIGNEE: Fujisawa-Pharm.
PATENT INFO: JP 05184359 27 Jul 1993
PRIORITY INFO: GB 1983-326508 4 Oct 1983; GB 1983-330981 21 Nov 1983
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
OTHER SOURCE: WPI: 1993-269029 [34]
AB An anti-superoxide-dismutase (SOD, EC-1.15.1.1) monoclonal antibody and a hybridoma producing it are new. The monoclonal antibody can be produced in large amounts. In an example, Cu-and Zn-SOD was prepared from human red blood cells and dissolved in a phosphate buffered saline at 1 mg/ml. The 100 ul solution with a 100 ug mixture of a diphtheria-tetanus toxoid-pertussis **vaccine** was administered i.p. to a female BALB/C mouse. After 28 days, a further 100 ul of **Cu-, Zn-SOD** was administered i.v. After 4 days, the mouse was sacrificed and the immunized spleen cells were collected. The spleen cells were then fused with mouse myeloma cells P3-X63-Ag.653 by the Kohler and Milstein methods. The anti-Cu- and Zn-SOD monoclonal antibody-producing hybridomas were cloned and the immunoglobulin class of the monoclonal antibody was identified. (5pp)

L118 ANSWER 22 OF 26 CABA COPYRIGHT 2001 CABI DUPLICATE 11
ACCESSION NUMBER: 92:122171 CABA
DOCUMENT NUMBER: 922272970
TITLE: Construction of **Cu-Zn superoxide dismutase** deletion mutants of Brucella abortus: analysis of survival in vitro in epithelial and phagocytic cells and in vivo in mice
AUTHOR: Tatum, F. M.; Detilleux, P. G.; Sacks, J. M.; Halling, S. M.
CORPORATE SOURCE: National Animal Disease Center, Agricultural Research Service, U.S. Department of Agriculture, PO Box 70, Ames, IA 50010, USA.
SOURCE: Infection and Immunity, (1992) Vol. 60, No. 7, pp. 2863-2869. 33 ref.
ISSN: 0019-9567
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Cu-Zn superoxide dismutase** (SOD) deletion mutants of Brucella abortus S2308, a virulent strain, and S19, a **vaccine** strain, were generated by gene replacement. A deletion plasmid, pBA DELTA sodknr, was constructed by excising the **Cu-**

**Zn SOD** gene (**Cu-Zn sod**)
from a 2.3-kb B. abortus DNA fragment of plasmid pBA20-1527 and inserting a 1.4-kb DNA fragment encoding kanamycin resistance into the **Cu-Zn sod** excision site. The deletion plasmid was introduced into B. abortus by electroporation, and Southern blot analysis confirmed that the antibiotic resistance fragment had replaced **Cu-Zn sod** in kanamycin-resistant colonies. The survival and growth of **Cu-Zn SOD** mutant strains were compared with that of the parental strains in HeLa cells and in the mouse macrophage-like cell line J774. The survival and growth of the **Cu-Zn SOD** mutant strains were similar to those of their respective parental strains in HeLa and J774 cell lines. The kinetics of infection with these strains were examined in BALB/c mice. The splenic levels of the S19 **Cu-Zn SOD** mutant recovered from intraperitoneally infected BALB/c mice were approximately 10-fold lower than those of the parental strain during 26 days after infection. Thereafter, infection sharply declined in both groups, and by 105 days after infection, no organisms were detected. The splenic levels of the S2308 Cu-Zu SOD mutant were lower than those of wild-type S2308-infected mice. The spleen weight of mice infected with the S2308 **Cu-Zn SOD** mutant were consistently lower than those of wild-type S2308-infected mice. These results suggest that the antioxidant enzyme Cu-Zu SOD plays a role in the survival and pathogenicity of B. abortus in vivo.

L118 ANSWER 23 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1990:471098 BIOSIS
DOCUMENT NUMBER: BA90:110518
TITLE: CLONING EXPRESSION AND OCCURRENCE OF THE BRUCELLA **COPPER ZINC SUPEROXIDE DISMUTASE**.
AUTHOR(S): BRICKER B J; TABATABAI L B; JUDGE B A; DEYOE B L; MAYFIELD J E
CORPORATE SOURCE: NATL. ANIM. DIS. CENT., AGRIC. RES. SERV., U.S. DEP. AGRIC., AMES, IOWA 50010.
SOURCE: INFECT IMMUN, (1990) 58 (9), 2935-2939.
CODEN: INFIBR. ISSN: 0019-9567.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB Recently, the complete amino acid sequence of a protein expressed in Eschericha coli from cloned Brucella abortus DNA was reported. On the basis of amino acid homology, this protein was identified as a **copper-zinc superoxide dismutase** (**Cu-Zn SOD**) (B. L. Beck, L. B. Tabatabai, and J. E. Mayfield, Biochemistry 29:372-376, 1990). We demonstrate in this paper that the sequenced protein is the same as the previously studied salt-extractable protein BCSP20. The plasmid-encoded protein expressed from recombinant E. coli is identical to the Brucella-derived BCSP20 in molecular mass, N-terminal amino acid sequence, a cross-reactivity with homologous and heterologous rabbit sera against either the recombinant gene product or the Brucella-derived protein. A survey of the expression of the **Cu-Zn SOD** protein in Brucella biovars representing all species was done by Western blotting (immunoblotting) using antisera raised against the recombinant E. coli-derived protein. With the exception of Brucella neotomae and Brucella suis biovar 2, the **Cu-Zn SOD** protein was detectable in all Brucella species and biovars tested, including eight biovars of B. abortus.

L118 ANSWER 24 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 1990:324565 BIOSIS
DOCUMENT NUMBER: BR39:31901
TITLE: ORAL IMMUNIZATION OF BALB-C MICE WITH SALMONELLA-TYPHIMURIUM AROA MUTANT CARRYING THE BRUCELLA-ABORTUS **COPPER ZINC SUPEROXIDE DISMUTASE** GENE.
AUTHOR(S): BELZER C A; TABATABAI L B; MAYFIELD J E
CORPORATE SOURCE: NATL. ANIM. DIS. CENT., ARS USDA, AMES, IOWA 50010, USA.
SOURCE: JOINT MEETING OF THE AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY AND THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS, NEW ORLEANS, LOUISIANA, USA, JUNE 4-7, 1990. FASEB (FED AM SOC EXP BIOL) J, (1990) 4 (7), A1797. CODEN: FAJOEC. ISSN: 0892-6638.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L118 ANSWER 25 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS DUPLICATE 12
ACCESSION NUMBER: 1990:130781 BIOSIS
DOCUMENT NUMBER: BA89:69592
TITLE: A PROTEIN ISOLATED FROM BRUCELLA-ABORTUS IS A **COPPER-ZINC SUPEROXIDE DISMUTASE**.
AUTHOR(S): BECK B L; TABATABAI L B; MAYFIELD J E
CORPORATE SOURCE: U.S. DEP. AGRIC., AGRIC. RES. SERVICE, NATL. ANIMAL DISEASE CENTER, AMES, IOWA 50010.
SOURCE: BIOCHEMISTRY, (1990) 29 (2), 372-376. CODEN: BICHAW. ISSN: 0006-2960.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Brucella abortus contains a protein that elicits an antigenic response in cattle previously exposed to the organism. The amino acid sequence of the recombinant form of this antigenic protein was determined by gas-phase sequencing of the pyridylethylated protein and its peptides obtained by digestion with cyanogen bromide (CNBr), clostripain, and Staphylococcus aureus V8 protease. The Brucella protein demonstrated 53.6% identity with the **Cu-Zn superoxide dismutase** (SOD) from Photobacterium leiognathi. Residues essential for metal coordination and enzymatic activity and cysteines required for the formation of the intrasubunit disulfide bridge of **Cu-Zn SOD** were conserved in the Brucella protein. The Brucella protein also exhibited SOD activity that was inhibited by cyanide, which is characteristic of a **Cu-Zn SOD**. Brucella abortus **Cu-Zn SOD** is the second prokaryotic **Cu-Zn SOD** to be sequenced, and the fifth found in prokaryotes. The high degree of conservation between Photobacterium and Brucella **Cu-Zn SOD** supports the hypothesis of a separately evolved prokaryotic and eukaryotic **Cu-Zn SOD** gene.

L118 ANSWER 26 OF 26 AGRICOLA
ACCESSION NUMBER: 97:13617 AGRICOLA
DOCUMENT NUMBER: IND20548209
TITLE: Brucella abortus antibody detection methods.
AUTHOR(S): Tabatabi, L.B.; Mayfield, J.E.; Beck, B.L.
AVAILABILITY: DNAL (aT223.V4A4)
SOURCE: [United States Department of Agriculture patents], 1 p
Publisher: [Washington, D.C.? : The Department, 1900?-
NOTE: Copies of USDA patents are available for a fee from the Commissioner of Patents and Trademarks, U.S.

Patents and Trademarks Office, Washington, D.C. 20231.
Includes references
PUB. COUNTRY: District of Columbia; United States
DOCUMENT TYPE: Article
FILE SEGMENT: USDA
LANGUAGE: English
AB Abstract: Diagnostic reagents comprising the 20 kd Brucella abortus **CuZn superoxide dismutase** (B. abortus 1CuZnSOD) protein and peptide segments thereof, which are effective as antigenic determinants, have been identified. These reagents are useful for detecting an antibody response to the B. abortus **CuZnSOD** protein in bovine serum or other body fluid samples and can also be used for distinguishing between animals which have serum antibody of a natural B. abortus infection and those which have an antibody response to a B. abortus strain 19 **vaccine** or a B. abortus strain which does not express the 20 kd protein.

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